

The Practicality of Learning Devices Cooperative Models Based on Blended Learning to Improve Learning Outcomes of 10th-Grade MA Students

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ABSTRACT

Less active and low learning outcomes of students learning by the learning model used by the teacher. Among the variations that can be done is to take advantage of existing technological developments. Therefore, a study was conducted involving the development of learning devices. The research carried out was the development of cooperative learning mathematical learning tools in the form of Blended Learning Based Student Worksheets (LKPD). This study aims to produce a blended learning based learning tool that is practical to improve student learning outcomes. This development research uses the Plomp model which consists of three phases namely the initial investigation phase, the development phase, and the improvement phase. The subjects of this study were 10th-grade religion students of MA KMM Kauman Padangpanjang. Based on the learning outcomes, students are active in learning. The results of the interview show that the devices are easily developed and motivate students in learning and the results of the practicality questionnaire that shows the learning tools developed have met the practical requirements in terms of implementation, ease and time needed. The value of each meeting also increases with an average value of 83 daily test scores. Based on these results it can be concluded that the cooperative mathematics learning model based on blended learning to improve learning outcomes of class X MA students can be used practically.

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1. INTRODUCTION

Mathematics as a science that underlies the development of modern technology, has an important role in various disciplines and advances the power of human thought. Mathematics learning is needed in life, as conveyed by Hidayati et al. (2017) "Mathematics is needed, both for everyday life and in the face of advances in science and technology". Mathematics is also very helpful in advancing science and technology as we use it now. Along with the development and progress of science and technology that is increasingly rapid, the world of education also needs to innovate or renew in various fields, including in its implementation strategy (Kaharuddin, 2019; Fonna, 2019). As an educator, the teacher must be able to develop his ability to follow the development of science and technology (science and technology). Technology can be used as a means of supporting learning, such as learning media that support the achievement of learning objectives.

Based on the results of interviews with the X grade math teacher at one of the Madrasah Aliyah in Padangpanjang, it was found that students had been facilitated with Wi-Fi and they were encouraged to bring laptops/notebooks to school but had not been fully utilized. Learning is still dominated by teachers and the low learning outcomes of students in the cognitive field, seen from the results of the mid-grade X Religious Class assessment of TP 2018/2019, students from 38 students, 82% of their grades are

below the KKM.

One way to make active students is by cooperative learning. Rusman (2012: 202) states that "cooperative learning is a form of learning by means of students working in small groups collaboratively whose members consist of four to six people with heterogeneous group structures. This definition implies that Cooperative is learning based on learning in small groups that emphasize students both individually and in groups.

Johnson and Johnson (1999) stated "Students work together to achieve common goals. Students are given two responsibilities, namely to maximize their own learning and to maximize learning from all other group members." Thus, learners look for results that benefit all people with whom they are cooperatively connected. Students discuss the material with each other, help each other understand it, and encourage each other to work hard. Cooperative research has often been carried out by education practitioners both at the S1, S2 and S3 levels of Education. Robert and Slavin (1996: 43) state "Research on cooperative learning is one of the greatest success stories in the history of educational research". The steps of cooperative model learning in Rusman (2012: 211) are 1) Delivering goals and motivating students, 2) Presenting information, 3) Organizing students into study groups, 4) Guiding groups working and learning, 5) Evaluation and 6) Give awards.

Blended learning comes from the word blended which means combination/ learning and learning which means learning. Technological advances have an influence on the methods of learning carried out at school. Dwiyoogo (2018: 60) states that blended learning is "learning that combines learning delivery strategies using face-to-face activities, computer-based learning (offline) and online computers (internet and mobile learning)". Rovai and Hope (2004: 3), states that blended learning is a combination of face-to-face learning and online learning so that instruction occurs both in class and online or outside the classroom, and where online learning becomes a continuation of learning in the classroom. According to Garrison and Kanuka (2004: 96), integrated learning (blended learning) is the integration of face-to-face learning experiences with online learning experiences. From some of the opinions above, it was concluded that PBBL is learning that combines face-to-face learning in class and outside the classroom by utilizing internet media as a communication learning tool (online learning). The blended composition that is often used is 50/50 which means 50 percent face to face and 50 percent online learning. Some also make 75/25 or vice versa, it depends on the needs and competency analysis to be achieved. In this study, researchers took a composition of 50/50 learning. Gürsul and Keser (2009: 1) state that learning outcomes with PBBL are higher than learning the only face to face. In this study face-to-face learning in the classroom is done using the developed RPP and LKPD. Students are given the opportunity to communicate remotely with the teacher through a blog or email as a form of online learning.

Blended learning besides being able to improve learning outcomes, it can also improve communication, namely in the classroom-based learning environment and communication on an online basis. Sometimes students feel embarrassed to ask in class because they are afraid of being wrong and will be laughed at by their classmates, but with the help of communication through online media will eliminate these obstacles. They can ask by e-mail to the teacher so that their questions are unknown to other friends. Sometimes there are students who are not confident with the question so feel ashamed to ask in the class or online discussion forum. Whereas for students who have confidence they can ask questions or discuss through blogs that have been provided by the teacher. On blogs, the questions of students can be seen by their friends so as to minimize the occurrence of the same questions. Staker and Michael (2012) states, "A formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path and/or pace and at least in part at a supervised brick-and-mortar location away from home".

In this study face-to-face learning in class using RPP for Teachers assisted with LKPD. As for online learning, use blogs and e-mail. The blog that is used with the address <https://alfahusaini.blogspot.com/> and e-mail address alfahusaini@gmail.com. E-mail is also used as a means of sending assignments to the Teacher. In online learning, students are given the opportunity to find additional sources of teaching material on the internet, so as to add teaching materials to students.

Laptops/notebooks are used as online communication media between teachers and students, laptops/notebooks are also used to find learning materials and send assignments to teachers via e-mail that has been provided. Hamdani (2011: 62) states, "learning with technology media can increase the value of students, their attitude towards learning and evaluation of their learning experiences". With advances in technology, especially in internet access, it is very

beneficial for education because of its ability to process large amounts of data. Besides that, the internet can be a medium in online learning. According to Ismail and Arnawa (2018) "Mathematics teachers are expected to take advantage of learning in the 21st Century as a tool to enrich students' knowledge and interests". The advantage is to take advantage of existing technological developments to support the achievement of better learning outcomes.

Singer and Stoicesc (2010: 1) state that online learning can strengthen learning efficiently. In online learning in this study more learning is focused on online discussion. It is also not possible for students to search for materials widely on the internet. Online discussions provide opportunities for students to freely ask teachers without having to be hindered by shame. Online learning also gives students and teachers the flexibility of time to ask questions and answer questions. In this study, researchers used blogs and e-mail to send assignments or things related to learning with the address mentioned earlier.

As a study guide in class, Student Worksheets are used. (LKPD). Majid (2011: 167) states that LKPD is sheets that contain tasks that must be done by students. Worksheets are usually in the form of instructions, steps for completing a task. A task ordered on a worksheet must be clear on the basic competencies to be achieved. According to Hamdani (2011: 74) states, "student worksheets are learning tools as a compliment or supporting means of implementing learning plans (RPP) in the form of worksheets that contain information and questions that must be answered by students". the statement shows that LKPD is part of a device that can be developed according to teaching material. Asmar and Riry (2018) states "Teachers need a worksheet in learning to be able to organize the students' understanding and can help students to understand the material".

With the advancement of science and technology, education practitioners must follow these developments. According to Ulianty et al. (2018) "Teachers must be able to choose the right approach, strategy, model and/or teaching method to teach mathematics and to make learning more meaningful, easy to understand and useful for current students and future life. This can be done by using the development of the technology itself in learning. According to Archambault dan Jered (2017) "Using a mixed methods case-study design, the program evaluation suggests that the LBL program was successful in assisting teachers with applying skills related to blended learning, including planning for and implementing technology to support learning, examining key blended learning components, and exploring traditional instructional models as opposed to new ones".

The purpose of this study is to improve learning outcomes. Learning outcomes are abilities possessed by students after he receives his learning experience. After a learning process ends, students get a learning outcome. Learning outcomes have an important role in the learning process. The main objectives to be achieved in learning activities are learning outcomes. Learning outcomes are used to find out just where students can understand and understand the material. According to Sudjana (2009: 3) "defining the learning outcomes of students, in essence, is a change in behavior as a result of learning in a broader sense covering the fields of cognitive, affective and psychomotor".

Based on the understanding of learning outcomes above, the writer can conclude that the learning outcomes are a result obtained by students after the students carry out learning and learning activities as well as evidence of the success achieved by someone

involving cognitive, affective and psychomotor aspects, expressed in the symbol, letters, and sentences. The purpose of this research focus is on the cognitive domain.

2. RESEARCH METHOD

The type of research carried out is research and development (research and development), which aims to produce learning devices that are valid, practical, effective and appropriate to the conditions in the field. According to Sugiyono (2010: 297), Research and Development is a research method used to produce certain products and test the effectiveness of these products. The product to be developed is a mathematics learning device consisting of LKPD for 10th grade MA.

The development model is a set of sequential procedures to carry out the design and development of learning that is manifested in the form of diagrams or narratives. The development model in this study is Model Plomp. This model was developed by Tjeerd Plomp. The Plomp model consists of three stages, namely the initial investigation stage (preliminary research), the stage of developing or making a prototype (development or prototyping phase) and the assessment phase. Each phase is explained in the following table.

Table1. Development Phase in the Plomp Model

Fase	Aktivitas
Preliminary research	Problem analysis and literature studies
Prototyping phase	Development of the prototype to be tested and revised based on the formative evaluation, the initial prototype was carried out through expert assessment
Assessment phase	Assess whether users can use the product (practicality)

Sources: Plomp (2013:30)

The instruments used to collect data were questionnaires, interview guideline sheets, and observation sheets. As for the steps taken to determine the practicality of the LKPD based on the questionnaire data obtained are:

1. Give answer scores on questionnaires arranged according to the Likert scale as in the following table.

Table2. Score Answers on Questionnaire Practicality

Alternative Answers	Score
Strongly agree	4
Agree	3
Disagree	2
Strongly disagree	1

Sources: Riduwan (2010: 88).

- 1) Determine the average of each item with the formula:

$$\text{Average} = \frac{\text{the number of scores given by all respondents on one item}}{\text{total number of respondents}}$$

- 2) Determine the practical value of each item with the formula:

$$\text{Practical Value} = \frac{\text{Average score for each item}}{\text{maximum score for each item}} \times 100$$

- 3) Practical values obtained are grouped according to the practical criteria of the LKPD in the following Table:

Table3. LKPD Practicality Criteria

Percentage Range	Criteria
$0 \leq TK \leq 20$	Not practical
$21 < TK \leq 40$	Less practical
$41 < TK \leq 60$	Practical enough

$61 < TK \leq 80$	Practical
$81 < TK \leq 100$	Very practical

Source: Riduwan (2010: 89)

Then analyze the results of observations in the learning process, as well as analyze the results of interviews. Learning outcomes of students are calculated based on individual completeness obtained by students. Assessment of learning outcomes tests aims to see learning outcomes within the planned timeframe while using the developed LKPD. Granting learning outcomes test scores by:

$$\text{Test scores for learning outcomes} = \frac{\text{scores obtained by students}}{\text{maximum score}} \times 100$$

3. RESULT AND DISCUSSION

This cooperative learning model of mathematics based on blended learning requires students to be active in learning, besides being active in group discussions, students are also required to be individually active in understanding teaching material, by finding learning resources especially using internet access, students can also actively conduct online discussions, both discussions with teachers and with fellow students. This is expected to improve student learning outcomes. Research is supported by research conducted by Sjukur (2012: 368) which has proven that learning based on blended learning can improve student learning outcomes.

After observing when learning shows students are more active in learning than ordinary learning. Students are also more motivated in learning, seen when students conduct group discussions so that learning outcomes are obtained as expected. Can be seen in the graph that there is an increase in learning outcomes at each meeting as in the following graph.

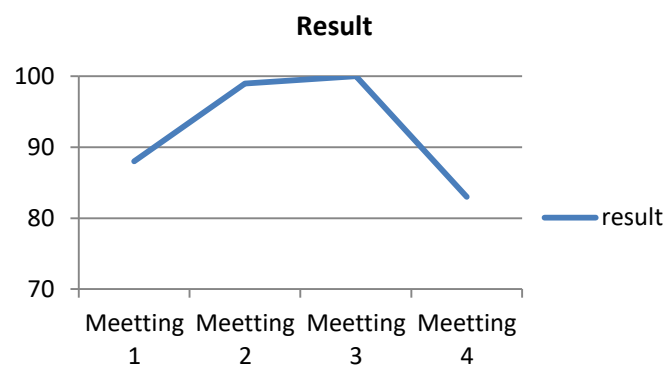


Figure 1. Obtaining the Average Value of Students

The decline in the 4th meeting is because the value taken is the daily test score on the basic competencies taught. However, this value has met the requirements of Minister of Education and Culture No. 81A in 2013 which stated that students were said to be complete if $\geq 75\%$ of students scored above KKM.

After interviews with students, information was obtained that students were more motivated while studying, this was because students could search for information widely and allow students to ask questions and discuss with anyone. Besides, those students are also more confident in asking questions about teaching

materials that they do not understand. because students can ask questions privately via email to the teacher. But there are a few obstacles that students feel that when sending assignments via email, there are some students who are not used to doing this. But it can be overcome by providing direction and guidance on how to send assignments through email. Besides, based on the results of the interview also obtained information that students can do learning well and easily using blended learning based learning. The results of the questionnaire after blended learning based learning obtained the value of readability and clarity 76.76; Value of process of use and ease of use 78.74 and value of time use 71.77. Based on the practicality criteria by Riduwan, the free interval of learning devices is in intervals of 61 to 80.

4. CONCLUSION

Based on the results of the study it has been produced learning devices that meet practical criteria with characteristics, namely the ease of use and clarity of instructions for using LKPD based on blended learning and can improve learning outcomes for users in using blended learning-based learning tools.

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